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**Application for Letters Patent  
of the United States**

**INVENTOR:** CHARLES HILLEL ROSENDORF

**TITLE OF  
INVENTION:** SECURITIES ANALYSIS METHOD AND SYSTEM

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## SECURITIES ANALYSIS METHOD AND SYSTEM

## FIELD OF THE INVENTION.

The present invention relates to a system and method for analysis of data with reference to a benchmark data point. The present invention is particularly suited for analyzing the performance of securities, such as stocks, mutual funds or the like over a period of time.

## BACKGROUND OF THE INVENTION.

In U.S. Pat. No. 3,270,190 Lambert discloses a securities evaluator which is mechanically programmed with ten years of data for securities. Based on a formula to fit the data of prior years, the inventor claims the high and low stock price for the coming year can be determined from the estimated range of variables input by the user for the coming year. The evaluator has no means of having the financial data contained therein automatically updated.

In U.S. Pat. No. 5,414,838 Kolton et al. disclose a system for extracting historical market information with condition and attributed windows. The system includes facilities for including domain knowledge in a query, such as market knowledge of calendar events, holidays, triple-witching hours and option expiration dates. Additional facilities enable the user to include dates of political elections, date of issuance and value of company earning reports and the like in the query. The dates from which a user can choose to extract historical information are determined by the system, and unlike the present invention, do not offer the user the ability to randomly choose time points between data points chosen by the user.

Chennault (U.S. Pat. No. 5,930,774) discloses a method and computer program for evaluating mutual fund portfolios to enable an investor to determine the diversity, or lack thereof, of at least two mutual funds. The invention determines whether the funds are really different from each other, or if the funds include similar positions or securities in different market sectors, such

1 as, for example, consumer goods, energy or pharmaceuticals, determines just how  
2 different these funds actually are from one another.

3  
4 U.S. Pat. No. 5,946,666 (Nevo et al.) discloses a system for the  
5 simultaneous monitoring and subsequent analysis of financial securities to  
6 provide a basis for future investment or divestiture. The system analyzes data  
7 taken from time periods such as seconds, minutes, hours, or days to longer  
8 periods of a year or more.

9  
10 The Nevo et al. system appears to limit the number of securities to  
11 be displayed at any particular time to three (3), in contrast to the present  
12 invention which can analyze and display data from up to several dozen securities.  
13 Nevo et al. do not explicitly explain how the sampling period is modified,  
14 whereas the present invention includes a number of different ways of determining  
15 the sampling period, ranging from fixed periods of time to random time periods.

16  
17 Black et al. (U.S. Pat. No. 6,012,042) discloses a data conversion  
18 device for converting both technical and fundamental data about a security into  
19 a unified format for analysis by an analysis process engine. The invention  
20 creates records for each calendar day, by the steps of deleting a plurality of  
21 technical data records from a multiplicity of technical data records, and  
22 inserting a fundamental data value into the multiplicity of records, in order to  
23 correct for "nil" values that would occur when no data is available for a  
24 particular security at a particular date. The analysis process engine processes  
25 the disparate data according to a set of rules, and the results are forwarded to  
26 a display for viewing or used for further analysis.

27  
28 The present invention permits a user to compare up to 126 securities  
29 simultaneously. The present invention offers the user an option to choose any  
30 start and end date (as opposed to a preset default sampling period), and the  
31 ability to randomly choose additional dates to use during the comparison process.  
32 Further, the present invention enables the user to compare the performance of  
33 multiple types of securities, such as equities and mutual funds, simultaneously.

1 BRIEF SUMMARY OF THE INVENTION.  
2

3 An object of the present invention is to provide a system that can  
4 analyze the performance of a financial vehicle using realtime data.  
5

6 Another object of the present invention is to provide an analysis  
7 system that can analyze the performance of a financial vehicle over a period of  
8 time.  
9

10 Another object of the present invention is to provide an analysis  
11 system that can analyze the performance of a financial vehicle over a randomly  
12 determined time period.  
13

14 Yet another object of the present invention is to provide an analysis  
15 system that is platform independent and that can be used on a variety of devices.  
16

17 Still another object of the present invention is to provide an  
18 analysis system that can track the performance of numerous financial vehicles  
19 simultaneously.  
20

21 Another object of the present invention is to provide a securities  
22 analysis system whose data can be output in a variety of manners, such as  
23 graphically, tabularly, or electronically in a format such as a spreadsheet.  
24

25 Still another object of the present invention is to provide a  
26 securities analysis system whose compared data can be exported into a downstream  
27 analytical tool, such as a second financial analysis program.  
28

29 Another object of the present invention is to provide a method to  
30 analyze the performance of a financial vehicle using realtime data.  
31

32 Still another object of the present invention is to provide a method  
33 to analyze the performance of a financial vehicle over a period of time.  
34

35 Another object of the present invention is to provide a method to  
36 analyze the performance of a financial vehicle over a randomly determined time

1 period.

2  
3 Yet another object of the present invention is to provide a method  
4 of analysis that is platform independent and that can be practiced using a  
5 variety of devices.

6  
7 Still another object of the present invention is to provide a method  
8 of analysis that can track the performance of numerous financial vehicles  
9 simultaneously.

10  
11 Another object of the present invention is to provide a method of  
12 analysis in which data can be output in a variety of manners, such as  
13 graphically, tabularly, or electronically in a format such as a spreadsheet.

14  
15 Still another object of the present invention is to provide a method  
16 of analysis in which the analyzed data can be exported into a second analytical  
17 tool, such as a financial analysis program.

18  
19 The present invention permits a user to compare a number of financial  
20 vehicles simultaneously. In an embodiment of the present invention, the user can  
21 analyze the data for up to 126 financial vehicles simultaneously. A significant  
22 feature of the present invention is the option available to a user to choose any  
23 start and end date and time for performing the analysis (as opposed to a preset  
24 default sampling period). The present invention enables a user to compare the  
25 performance of multiple securities simultaneously.

26  
27 The present invention is a system for analyzing financial data  
28 comprising a computer having a communication means for obtaining one or more  
29 points of data related to a security; means for storing the obtained data in a  
30 memory; a means for obtaining a second point of data related to the security and  
31 a means for storing the second data point in the memory; a means for comparing  
32 the data from the obtained data points with the data of an additional data point  
33 related to the security, the additional data point being randomly chosen from  
34 between the obtained data points; and a display means to display the analyzed  
35 data. The data points between which the analysis is made can also be randomly  
36 chosen. The system orders the randomly chosen data points prior to comparing the

1 data, which is displayed in a format such as a table, exported spreadsheet format  
2 file, or graph. The compared data can be exported to a method of analyzing  
3 financial data. Using the present invention, an individual can track a  
4 securities portfolio, monitor its performance and make investment decisions based  
5 on performance.  
6  
7

8 BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING.  
9

10 FIG. 1A illustrates the system of the present invention.  
11

12 FIG. 1B illustrates system components.  
13

14 FIG. 2A is a flow chart summarizing the method of the present  
15 invention.  
16

17 FIG. 2B summarizes functions of the present invention.  
18

19 FIG. 3 summarizes the analysis functions of the present invention.  
20

21 FIG. 4 summarizes the single date analysis function.  
22

23 FIG. 5 summarizes the import functions.  
24  
25

26 DETAILED DESCRIPTION OF THE INVENTION.  
27

28 As used within the context of the present specification, the term  
29 "security" is intended to encompass various financial vehicles, including stocks  
30 (equities), bonds (all types, including corporate, government, municipal, high  
31 yield, so called "junk bonds", and the like), mutual funds, commodities, options  
32 (puts and calls), derivatives, and various indices and benchmarks used by the  
33 financial industry. The terms "security" or "securities" and "financial vehicle"  
34 will be used interchangeably in the present specification. Among these indices  
35 and benchmarks are such indices as the Dow Jones Industrial Index ("DJIA"), the  
36 Standard and Poors 500 Index ("S&P500"), the Russell 2000, and the like, which

1 are intended as examples only and not intended to be any limitation.  
2

3 In securities and other analyses, a data point is commonly referenced  
4 by the date and/or time corresponding to such data point; however, there need not  
5 be such limitations. Thus, throughout this specification, a data point is  
6 sometimes referred to by the corresponding date/time and sometimes as merely a  
7 "point".  
8

9 The present invention is designed for use on a computer system. The  
10 computer system may be an individual personal computer, a computer network, or  
11 a portable computer or similar handheld device, such as a pocket computer  
12 marketed by companies such as Compaq or Hewlett-Packard. The present invention  
13 is capable of use on devices which include a software program comprising an  
14 emulator for the Disk Operating System ("DOS"), such as the product sold under  
15 the tradename Microsoft DOS (TM).  
16

17 Referring to Figs. 1A and 1B, the system 10 of the present invention  
18 employs a computer 12 equipped with a microprocessor 14, random access memory 16,  
19 read-only memory 18, a mass-storage device 20 such as a hard disk, and a  
20 communications means 22 to enable the computer 12 to communicate with output  
21 devices such as a printer 24.  
22

23 The communications means 22 may comprise a printer interface, which  
24 may be either a parallel interface or a serial interface, and appropriate cabling  
25 to the printer. A second communications means 22a may comprise a modem and  
26 serial port or SCSI (or SCSIII) or Universal Serial Bus ("USB") interface enabling  
27 the computer 12 to communicate with communications network 32, such as a public  
28 telephone net, the Internet, an extranet, the world wide web or other wired or  
29 wireless communications system. Such communications means 22 may also comprise  
30 a cable modem and a connection to a cable service, an ISDN modem and ISDN line,  
31 a Digital Subscriber Line ("DSL") modem and DSL line, T-1 line, and the like.  
32 The system further includes an input means such as keyboard 26, a mouse 28, or  
33 similar device such as a Touch-Pad or pointing device such as the ACCUPOINT  
34 (Registered Trademark of Toshiba America Information Systems, Inc. for a cursor  
35 control device for computers, attached to the computer keyboard), or scanner (not  
36 shown), and a visual display means 30 such as a cathode ray tube (CRT) monitor

1 or video display terminal, a dual-scan monitor, thin-film transistor, active-  
2 matrix monitor, electronic glasses, or their equivalents. Software 33 which is  
3 resident in the computer's memory, or which may be stored in the memory of  
4 another computer such as a server in a computer network or other central computer  
5 includes the operating system necessary for operation of the computer. Among the  
6 possible operating systems are Macintosh Operating System. or for IBM-compatible  
7 computers, operating systems such as Windows 3.1x, Windows 95, 98, Millennium,  
8 NT or 2000, or UNIX or LINUX operating systems. In an embodiment of the present  
9 invention, the system is designed for operation under the WINDOWS (Trademark of  
10 Microsoft Corp., Redmond, WA) operating system.

11  
12 The present invention can process real-time data provided by a third  
13 party data provider 40. FIG. 1A shows the third party data provider 40 as a  
14 stand-alone computer; however, it is to be understood that third party data  
15 provider 40 can be a central computer such as a mainframe, minicomputer, or other  
16 such combinations comprising storage media and computer systems known to those  
17 skilled in the art, using as examples only, providers such as Dow-Jones Inc., or  
18 LEXIS-NEXIS. The present invention can also process financial data that has been  
19 stored, whether on a computer of the user, or stored by another computer system  
20 and which is in communication with the computer system of the user. In one  
21 embodiment of the present invention, data provided by the third party data  
22 provider 40 is transmitted to computer 12 by a communications means such as a  
23 high speed data network.

24  
25 The output of the financial data can be displayed graphically or in  
26 the form of a table or spreadsheet on an associated computer screen. Data can  
27 also be saved to a means of mass storage, such as a floppy diskette, hard drive,  
28 compact disk, digital versatile disk, memory stick and the like. The output can  
29 also be directed to a printer, and a hard copy obtained.

30  
31 The method 100 of the present invention is used in the following  
32 manner (FIGs. 2A-3). At step 102 the program is loaded into memory of the user's  
33 computer system. Either historical data (H4) 212 or daily data (CH) 214 is  
34 obtained at step 104 from a third party provider 40, and entered into the  
35 databases. Historical data 212 is stored in a first database 213 and daily data  
36 214 is stored in a second database 215 (at step 106). During the import step



1 106, the symbols 204 for the securities are imported from the data provider.  
2 After the symbols have been imported, the user can choose whether to modify the  
3 names of the imported symbols 204. The user determines which security or  
4 securities whose performance is to be monitored (step 108). The choice of  
5 security is entirely up to the user. At step 110 the user selects those symbols  
6 204 from the databases corresponding to the desired security or securities. The  
7 user has an option to manually create a different symbol 204 for a security if  
8 the user so desires, such as, for example only, to give one security two  
9 different symbols for different tracking purposes. At 112 the user selects those  
10 names 240, if any, that have been imported for the security or securities.  
11 Because sometimes the names given by the data provider may or may not be suitable  
12 for the user's purposes, the user has an option to manually create a different  
13 name for a security. Another reason for the user changing a name is, for example  
14 only, to give one security two different names and symbols for different tracking  
15 purposes.

16  
17 The symbols 204 and/or names 240 can be sorted (step 114) in either  
18 alphanumeric symbol order or Ascii name order, enabling the user to view them in  
19 an ordered manner. Symbols and names representing different type of securities,  
20 such as stocks and mutual funds, can be sorted further into groupings such as  
21 securities and mutual funds, or types of securities, such as, for example only,  
22 consumer goods, energy or pharmaceuticals. This step can be bypassed at the  
23 user's discretion.

24  
25 The financial data for the selected securities is analyzed using the  
26 Comparison function 202 at either of steps 116, 118 or 120, and the user can  
27 choose from one or more comparison functions at steps 116a-d. All of these  
28 comparison results can be viewed on a video display (step 122), or printed as  
29 either a hard copy of the display, or in the format of a report (steps 122-124)  
30 for future reference.

31  
32 Referring to FIG. 3, a Sequential comparison, using the "With FROM"  
33 analysis is employed at step 116a, comparing the percent change in the price of  
34 the security over the chosen time period, with the oldest date being defined at  
35 the 0.0% change basis.

1 A Sequential comparison (116b), using the "With TO" analysis compares  
2 the percent change in the price of the security over the chosen time period, with  
3 the newest date being defined at the 0.0% change basis.  
4

5 A Sequential comparison (116c), using the "Until TO" analysis  
6 compares the percent change in the price of the security over the chosen time  
7 period, with the oldest date being defined at the 0.0% change basis. This  
8 function enables the user to see how each newer Time relates to the Time before  
9 it until the newest time.  
10

11 A Sequential comparison (116d), using the "Until FROM" analysis  
12 compares the percent change in the price of the security over the chosen time  
13 period, with the newest date being defined at the 0.0% change basis.  
14

15 Step 118 employs the "Random" comparison using the same analyses as  
16 in 116a-d, using the parameters described above. The "Random" method is defined  
17 as choosing dates and times without use of an arithmetical pattern between them;  
18 arithmetical patterns are the approach used in the prior art.  
19

20 A Single Date Comparison Function 270 (step 120) comprises two  
21 functions, a single day function 272 and a single date function 274. Single date  
22 function 274 compares financial data on any date and hour with financial data on  
23 any later date and time; all intervening data points are omitted from the  
24 comparison. Single day function 272 compares financial data on any date and time  
25 with the corresponding financial data on that same day but with a different time;  
26 any intervening data points are omitted from the comparison.  
27

28 Once the securities' data has been compared using one of the above  
29 comparisons, the compared data can be displayed on a video display terminal 30  
30 (step 122), and viewed as a table (122a), a spreadsheet format file (122b) or a  
31 graph (122c). The displayed data from step 122 can be printed (124), exported  
32 (126) to another financial analysis program if the user wishes to analyze the  
33 compared data further in another spreadsheet. The displayed data may also be  
34 stored as a data file (step 128). At chosen intervals (step 130), data changes  
35 are entered into the Process Log 332.  
36

1           The user can make a determination as to a course of action to take,  
2 if any, regarding any of the securities after any of steps 116-122. This  
3 determination is solely at the option of the user, and will be described further  
4 in the sections below. The elements of the present invention will be described  
5 in greater detail in the following sections.

#### 6 7 Features of the Present Invention

8  
9           Each function described below can be implemented and programmed by  
10 those individuals skilled in the relevant art.

#### 11 12 **Comparison Function**

13           The Comparison Function 202 ("Compare") is a major element of the  
14 present invention, which allows for the simultaneous performance comparisons of  
15 securities data.

16  
17           The Comparison Function 202 allows the user to choose from an almost  
18 unlimited list of imported symbols 204 and simultaneously compare up-to-the-  
19 second performance for any dozens of symbols 204 during any calendar period. All  
20 of these comparison results can be output as a report 206 for future reference.  
21 In one embodiment of the invention, the Comparison Function 202 can be initiated  
22 by pressing a specific function key on a keyboard, such as the F6 key.

23  
24           The computer program of the present invention has a size that is less  
25 than 4 megabytes, exclusive of securities data. The program of the present  
26 invention and its associated data are designed to reside entirely on the user's  
27 computer 12. By being resident on the user's computer, this functionality  
28 eliminates downtime that can occur while waiting to receive data from another  
29 source, such as through an Internet connection, or by delays of time sensitive  
30 results that may occur using a shared server.

31  
32           The present invention includes an import feature 210, in which  
33 financial securities data can be obtained from one or more third-party data  
34 providers 40, such as directly from, for example only and not intended to be any  
35 limitation, the Dow-Jones Publishing Company (Princeton, NJ), Standard and Poors  
36 (New York, NY), or Moody's Analytical Services (New York, NY). The user has the

1 ability to import the following:

2  
3 a. the historic data 212 ("Historic-H4") for the desired security  
4 or securities for any desired calendar length of time. This step is usually  
5 performed when first beginning the analysis of a particular security. In an  
6 embodiment of the present invention, historic data 212 represents either the  
7 closing average price of the security (as NAV), or the Adjusted Net Asset Value  
8 ("ANAV") for a security such as a mutual fund, at 4:00 PM.

9  
10 b. the daily data 214 "(Daily-CH)" for the desired security or  
11 securities. This step is generally done for only one day at a time, and that day  
12 is generally "today", i.e., the data for the date on which the importation is  
13 being performed. The user has a choice of using entirely historical data 212,  
14 for that security, entirely daily data 214, or a merge of both types of data.  
15 In addition, daily data 214 may be accumulated into a history of days. In an  
16 embodiment of the present invention, the daily data 214 is the current price of  
17 the security at a given hour, which does not necessarily have to be 4:00 PM. For  
18 securities such as mutual funds which are priced using the Net Asset Value  
19 ("NAV") method, the daily data 214 of such a fund is expressed as the NAV.

20  
21 c. a merge 216 of both the historic 212 and daily 214 data for the  
22 given security or securities.

23  
24 The Comparison function 202 is employed to compare the performance  
25 of symbols using any of the above data combinations. A user can employ the  
26 Comparison Function 202 to compare just historic data 212, just daily data 214  
27 or combinations thereof, depending the user's needs.

28  
29 The data format of the present invention accommodates realtime data  
30 generated 24 hours a day when a data snapshot is taken and assigned to any of the  
31 7 hourly breakpoints.

32  
33 The user can determine the freshness of the data in the databases  
34 based on the data date-range shown and the breakpoints for the newest date of  
35 both databases. By entering a date of interest as a "TOPoint" (see Examples  
36 below), data availability can be verified by the breakpoints automatically

1 selected by the software.

2  
3 As the updated data is received from the third party provider 40,  
4 data from the imported symbols and their corresponding data is merged into the  
5 databases 213 and 215.

6  
7 Because the present invention employs a comparison of changing data  
8 with a benchmark data point, it is suitable for uses other than strictly for  
9 securities analysis. Thus, up-to-the-moment global/regional performance  
10 monitoring of stock market equities, indices, sales, government and/or corporate  
11 budgets, inventory control, or scientific applications such as environmental  
12 monitoring, process monitoring and the like can also be performed using the  
13 present invention. Sales, budgets, cost data, inventory data, margin data,  
14 earnings data, income tax data, depreciation data, and amortization data can also  
15 be compared using the present invention. Even non-financial comparisons can be  
16 made using the present invention.

#### 17 18 19 **Import Function**

20 The Import Function 210 of the present invention is a non-proprietary  
21 open import program 210 which enables a data file to be imported into the  
22 databases when that data conforms to either of the standard formats employed by  
23 the present invention (the historic-H4 212 or daily-CH 214 data formats). Data  
24 can be obtained from numerous third party data providers 40.

25  
26 To facilitate the user's learning of the present invention, the  
27 present invention includes Historic-H4 file specifications 232 and daily-CH file  
28 specifications 234 and sample data files 236 for emulation.

29  
30 A user can employ the standard symbols for financial securities  
31 provided them by the data provider. Alternatively, the user can employ functions  
32 of the present invention such that the user can: in the historic-H4 212 and  
33 daily-CH 214 data, manually create or change names 240 for a security; in the  
34 daily-CH 214 data, manually create symbols 204; in the daily-CH 214, manually  
35 create or edit data.

## **View Master Function**

The View Master Function 238, which can also be called the Create Favorite Names Function 238, allows a user to let a security's name remain the same as it was when it was downloaded from the third party provider 40 or create a name 240 to always be associated with any symbol 204. By assigning a prefix character to a names 240, groups 244 and sub-groups 246 of symbols can be user defined, e.g., "C BIOTECH".

A sort feature 248 enables the user to sort the symbol 204/name 240 lists by either symbol 204 or name 240 in ASCII order. In an embodiment of the present invention, the View Master Function 238 is actuated by depressing a combination of the Control and V keys (Ctrl+V) simultaneously.

## **Date-Range Copy or Delete Function**

The Date-Range Copy or Delete Function 250 enables the user to Copy 252 or delete 254 a symbol's data for any period of time. In an embodiment of the present invention, the Date-Range Copy or Delete Function 250 is actuated by depressing a combination of the Control and B keys (Ctrl+B) simultaneously. Once the function has been actuated, menus appear allowing the user to choose the date range from which to choose data, and a choice of whether to copy 252 the data to another part of the database, or to delete 254 the data from the database. The Date-Range Copy Function 252 can be applied to data in daily CH 215 database. The Delete Function 254 can be applied to data in both the historical H4 213 and daily CH 215 databases. Existing historical H4 data 214 is automatically deleted during the import function, which updates the database.

## **Comparison Function**

The Comparison Function 202 enables the user to compare security data over time in any way the user may choose. In an embodiment of the present invention, this function is initiated by striking the F6 function key of a keyboard. Financial data can be analyzed over a period of time either sequentially, randomly, or comparing one day's data with that of just another single date. The user can choose a data snapshot taken at one of the hourly breakpoints, for example, between 10am-4pm, as part of the FROM and TO Points employed in this comparison feature.

1 In an embodiment of the present invention, the use of the Comparison  
2 Function is seen on a video display terminal as:

3  
4 | <-- Older/Newer --> |  
5 FROM |---- Middle dates/chosen hours ----| TO  
6 Date/Hour | 10am-4pm | Date/Hour  
7

8 where the FROM section represents the older date while the TO section would  
9 represent the newer data.

10  
11 The present invention emphasizes present securities data and future  
12 perspectives. The present invention is primarily concerned with the most recent  
13 financial data (today) and what might happen in the future, taking both short  
14 term (tomorrow) and longer term perspectives.

15  
16 Some examples of how the calculation of the comparison function 202  
17 express this relationship are illustrated below. As indicated below, the  
18 reference data points and the chosen data points can vary.

19  
20 **Example 1a. SEQUENTIAL Dates/Chosen Hours (10am-4pm)**

21 **Example 1a1. With FROM**

22 This function enables the user to compare financial data at any FROM  
23 point (date and hour) with all newer data (Middle dates and hours) and stop at  
24 any newest TO date and hour. This comparison can be expressed mathematically by  
25 the equation where:

26  
27 
$$((TOPoint-FROMPoint)/FROMPoint)*100 = +/- \%,$$

28  
29 wherein the financial data at the FROM date is subtracted from corresponding  
30 financial data at the TO point, and converted into a percentage change ("%")  
31 compared to the FROM point.

32  
33 An example of this function, showing how each newer time relates to  
34 the oldest time is shown below in Table 1:

35  
36 In this example, BIOTECH refers to an exemplary financial security

1 in the Biotechnology field, and is shown for purposes of example only.

2

3

09491.0301  
FOCUS TET 8450



**Table 1. Comparison Using "With FROM" Point**

BIOTECH				
Hour	Date	\$ Price	% Change	
4 PM	10/08/2000	37.31	0.00	
4 PM	10/09/2000	36.78	-1.42	
4 PM	10/10/2000	36.50	-2.17	
4 PM	10/11/2000	35.96	-3.62	
4 PM	10/12/2000	31.60	-15.30	

As can be seen from this Table, the comparison function is an iterative process, where after a first comparison is made using the data from the first two dates in the group, each additional dates' data are compared with that of the first, or "FROM Point", until the data from all of the data points has been compared. In this instance, the "FROM Point" is the reference data point, and all other dates are chosen data points.

As seen in this example, the security showed a loss of over 15% in a week's time period. For example only, if the user has rules wherein the user will sell a security after a certain percentage loss, for example, a loss of greater than 10%, such a change as shown above would tell the user to sell that security. If the user's rule is to sell when the security had incurred a 20% loss, this comparison would suggest to that user that the security is losing value, and to be prepared to sell shortly.

**Example 1a2. With TO**

This comparison function enables the user to compare financial data at any TO point (date and hour) with each older (Middle date and hour) data point and stop at any older (FROM) date and hour. This comparison can be expressed mathematically by the equation where:

$$(TOPoint - FROMPoint) / FROMPoint * 100 = +/- \%$$

wherein the financial data at the FROM point is subtracted from corresponding financial data at the TO point, and converted into a percentage change ("%") compared to the FROM point. As shown in Table 2 below, data for the newest Time (probably today) relates to each older Time.

Table 2. Comparison Using "With TO" Point

BIOTECH			
Time	Date	Price	% Change
4 PM	10/08/2000	37.31	-15.30
4 PM	10/09/2000	36.78	-14.08
4 PM	10/10/2000	36.50	-13.42
4 PM	10/11/2000	35.96	-12.12
4 PM	10/12/2000	31.60	0.00

Example 1a3. Until TO.

This function enables the user to compare financial data at any FROM point (date and hour) with a next chosen hour for all Middle dates and hours and stop at any TO date and hour. This comparison can be expressed mathematically by the equation where:

$$((TOPoint-FROMPoint)/FROMPoint*100 = +/- \%$$

As shown in Table 3 below, starting at the oldest Time, one can see how each newer Time relates to the Time before it until the newest Time.

Table. 3. Comparison Using "Until TO" Point

BIOTECH			
Hour	Date	\$ Price	% Change
4 PM	10/08/2000	37.31	0.00
4 PM	10/09/2000	36.78	-1.42
4 PM	10/10/2000	36.50	-0.76
4 PM	10/11/2000	35.96	-1.48
4 PM	10/12/2000	31.60	-12.12

Example 1a4. Until FROM

This function enables the user to compare financial data at any TO point (date and hour) with prior chosen hours for all Middle dates and hours and stop at any older FROM date and hour. This comparison can be expressed mathematically by the equation where:

$$((FROMPoint-TOPoint)/TOPoint)*100 = +/- \%$$

wherein the financial data at the TO point is subtracted from corresponding financial data at the FROM point, and converted into a percentage change ("%") compared to the TO point. As shown in the example below, data for the newest Time (probably today) relates to each older Time.

Table 4 shows how each Time relates to the Time after it until the oldest Time.

Table 4. Comparison Using "Until FROM" Point

BIOTECH			
Hour	Date	\$ Price	% Change
4 PM	10/08/2000	37.31	1.44
4 PM	10/09/2000	36.78	0.77
4 PM	10/10/2000	36.50	1.50
4 PM	10/11/2000	35.96	13.80
4 PM	10/12/2000	31.60	0.00

As seen in Table 4, the greatest percentage change in the value of the security occurred in the previous day, with the other previous days showing only minor percentage losses in the security's value.

Comparisons of data can be performed using data from one or both of the databases, and can be facilitated through the use of keystroke combinations.

In an embodiment of the present invention, a comparison using just historic data 214 is represented by the keystroke combination of (a) F9-ANAV+H4TODCH=OFF.

F9 represents a particular function key which is programmed to call up data from the historical H4 database 213, in which database the security value is represented as the Adjusted Net Asset Value ("ANAV") if the security is a mutual fund, or the Net Asset Value ("NAV") if the security is not a mutual fund, such as equities, indices and the like. The keystroke combination H4TODCH=OFF affects H4 (historical, 4 PM) symbol selection. When ON, the most recent comparison point (TO Point) is a Current Hourly (CH) database 214 date, and all prior dates are H4 212 database dates. When OFF, all dates are H4 database 212

1 data dates.

2  
3 The comparison for symbols using just daily-CH data is represented  
4 by the keystroke combination (b) F8-NAV+H4TODCH = ON or OFF.

5  
6 F8 represents a particular function key which is programmed to call  
7 up data from the current hourly CH database 215, in which database the security  
8 value is represented as the Net Asset Value ("NAV"), and H4TODCH=ON or OFF  
9 represents that the "TOPoint" employing current hourly data 214 has either been  
10 turned on or off.

11  
12 Combination (c) is a comparison of Symbols 204 using just historic-H4  
13 and/or just daily-CH data is represented by the keystroke combination (c) F9-  
14 ANAV+H4TODCH=OFF and/or F8-NAV.

15  
16 The comparison of symbols 204 using merged historic-H4 and daily-CH  
17 data together is represented by the keystroke combination (d) F9-ANAV+H4TODCH=ON.

18  
19 The comparison of symbols 204 using merged historic-H4 and daily-CH  
20 data together combined with symbols using just daily-CH data is represented by  
21 the keystroke combination (e) F9-ANAV+H4TODCH=ON and F8-NAV.

22  
23 In use, formulae (d) and (e) enable the user to do the following on  
24 a daily basis: First, data is imported from third party provider 40, to update  
25 the historic data database 213. This update step 104 collects all data through  
26 late on the previous day of trading; this will generally be late yesterday for  
27 a user who employs the present invention on a daily basis. For using formulas  
28 (a), (b), (c), (d) and (e), the user can obtain current (generally today's)  
29 current data 214, using a communications means 22, such as a realtime narrowband  
30 modem or wireless communications means, updating daily database 215 with data  
31 from up to 7 hourly breakpoints, generally over the time period from 10 AM-4 PM.

32  
33 **Example 1b. RANDOM DATES ("R Dates")**

34 The Random Dates Function 260 combines all of the features of the  
35 present invention described in Examples 1a1 through 1a4, but instead of including  
36 every Middle date and data in the analysis, enables the user to include up to 15

1 random dates. The dates are chosen by the user, in any random order desired by  
2 the user. The FROM and TO Points can also be randomly chosen by the user. A  
3 date checking function 264 compares each random date chosen to determine whether  
4 the chosen date is a weekend date, or a date for which data could have been  
5 available. If the date is verified, the date is entered. Once all of the dates  
6 have been verified and entered, the present invention performs the comparison  
7 functions chosen by the user. These mathematical calculations are identical to  
8 those of Examples 1a1 through 1a3, but the random dates financial data are  
9 substituted appropriately. When the data from the random data comparisons are  
10 displayed, the random dates chosen are displayed in chronological order.

11  
12 **Example 1c. SINGLE Date ("S-Date")**

13 Single date function 270 function compares financial data on any FROM  
14 Date/any hour with any later TO Date/any hour. All in between Dates/Hours are  
15 omitted in this function.

16  
17 **Compare Results Function**

18 The Compare Results function 300 enables the user to view the results  
19 of the various comparisons described in the comparison section in a format that  
20 best suits the user's needs, such as in a table 302, spreadsheet 304 or a graph.  
21 In an embodiment of the present invention, the graph is a 3-Dimensional ("3-D")  
22 graph 308.

23  
24 Also included in any of the output forms displayed (on the video  
25 display terminal 30) are the total number of symbols 204 for which financial data  
26 was available, and the number of symbols whose financial data was chosen and the  
27 number of symbols whose financial data was calculated. This indicates whether  
28 the data output represents data from all or a part of the securities being  
29 followed by the user.

30  
31 **Example 2a. TABLE function 302:**

32 As shown below, the financial data is displayed in the form of a  
33 Table, in which financial data for those symbols 204 with sufficient data are  
34 calculated. In cases where a focal date (such as FROM or TO Point) is missing,  
35 an error message is displayed, and is noted in the Process Log 332. In cases  
36 where certain financial data is missing, the missing price data is marked 'na'

("not available") in the Table. As shown below, the output lists symbols 204 and points vertically, and this is similar whether the user selects the screen display mode (default mode) or selects to have the table printed.

	\$ Price	% Change	Symbol a	Name a
Point 1	\$	%		
Point 2	\$	%		
Point(n)	\$	%		
			Symbol b	Name b
Point 1	\$	%		
Point 2	\$	%		
Point(n)	\$	%		
			Symbol(n)	Name(n)
Point(n)	\$	%		

#### Example 2b. SPREADSHEET function 304:

As shown below, the financial data is exported in the form of a spreadsheet file 304, and the financial data for those symbols 204 with sufficient data are calculated. Where certain financial data is missing, that point in the spreadsheet remains blank so that the data remains compatible with downstream analytical tools. The symbols 204 and names 240 can be output as a printed report 206 enabling the user to identify which symbols correspond to data in the cells of the spreadsheet. The spreadsheet data can be exported for use in other analytical programs, in formats such as .xls (Microsoft Excel), .wkl (Lotus 123), .dbf (dBase format), .sdf, and ASCII. The .sdf file format is System Data Format, which is defined as an ASCII text file in which records have a fixed length and end with a carriage return and line feed; fields are not delimited (Microsoft FoxPro Language Reference, published by Microsoft Corp., Redmond, WA, 1993).

The spreadsheet export function 306 lists symbols, prices (Symbol+8) and performances (Symbol+9) horizontally and points vertically, enabling an endless banner print output where appropriate.

The format of a representative spreadsheet 304 is illustrated below:

	Symbol8A	Symbol9A	Symbol8B	Symbol9B	Symbol(n)8	Symbol(n)9
Point1	\$	%	\$	%	\$	%
Point2	\$	%	\$	%	\$	%
Point(n)	\$	%	\$	%	\$	%

#### Example 2c. Graph Function 308:

Although not shown below, the financial data can also be displayed in the form of a Graph 308. The financial data for those symbols 204 with sufficient data are calculated. Where certain financial data is missing, that point remains blank on the graph for visual clarity. The symbols 204 and names 240 can be output as a printed report 206 enabling the user to identify which symbols correspond to which graphical data. The graph function 308 displays the graph on a video display monitor 30 as a 3-dimensional color graph, and has the capability to adjust the scale of the graph to fit the particular display (autoscale function 310). The axes of the graph are:

X Axis = Up to 126 symbols.  
Y Axis = Percent changes.  
Z Axis = Times.

In an embodiment of the present invention, each symbol is associated with a distinct color for data that is above or beneath the Y-axis' zero plane. Generally, the Y-axis zero plane is black. The graphing function enables a graph to be rotated or have its orientation shifted. In such instances where negative data is presented, such negative data can be observed by the user upon changing the orientation of the graph. The graphing function includes a means for displaying a gap to indicate where data was not available for calculation, either because of a gap in the database, or no data was available prior to the date of issuance of a recently issued security. The graph generates a datafile "color.dbf" which can be used by third-party graphing engines.

#### Archive/Restore Function

The Archive/Restore function 312 allows the user either to archive data 314 to or retrieve 316 data from the database. This function is used when,

1 for example, (a) the user has more data stored than necessary for the user's  
2 tasks, or (b) to improve the performance of the program by reducing the size of  
3 bulky files. In an embodiment of the present invention, this function is  
4 activated by pressing a combination of keys, such as the Control ("Ctrl") and the  
5 "R" key (Ctrl+R). The user can then select either the Archive function 314 or  
6 the Restore function 316, select which data is to be archived, or to be restored  
7 into a current analysis. The database includes an entire or partial date-range  
8 of historic data 212 and/or daily data 214 databases and all symbols 204 and  
9 names 240. The Archive/Restore function 312 also includes an Erase option 318,  
10 allowing the user to erase stored date-ranges. Data files are stored with file  
11 overwrite protection 320, using methods of overwrite protection known to those  
12 skilled in the art.

13  
14 When the Archive/Restore function 312 is used with the Erase  
15 Databases 322 function, the combination allows any list of symbols 204 and names  
16 240 and their data to be swapped out and replaced with a different list of  
17 symbols and/or names and their data, such that a user can monitor, for example,  
18 sales data, by replacing Stock Market Equities with Sales data. Once the  
19 appropriate Sales data, or other data is entered, or imported from other sources,  
20 or both, the present invention enables the user to employ the present invention  
21 as a means of analyzing its sales figures, or other functions which vary and  
22 which can be compared with a benchmark or standard point of reference, such as  
23 income, bank account balance, net worth and the like.

#### 24 25 **Merge Function**

26 A Merge function 324 enables the symbol 204 and name 240 lists, with  
27 or without their data, to be merged and/or to be automatically sorted by criteria  
28 chosen by the user, such as alphabetical, numerical, etc..

#### 29 30 **Sort Function**

31 The Sort function 248 enables the historic data 212 and daily data  
32 214 to be viewed, combined with, and sorted by symbol, date or name, in  
33 alphabetical, numerical, or other order as desired by the user. Using the Sort  
34 function 248, a user can view the combined historic data 212 and daily data 214  
35 for any one or more individual symbols 204. The Sort results can be viewed on  
36 a video display terminal 30, or exported in formats such as .xls, .wkl, .dbf,



1 .sdf, and ASCII. In an embodiment of the present invention, the Sort function  
2 248 is activated by depressing a combination of keys, Control and V  
3 simultaneously (Ctrl-V).  
4

#### 5 **Import Functions**

6 The present invention enables the user to import data from third  
7 party providers 40 as the user desires by manually activating import default 326.  
8 This invention looks up the file path and file name that have been user-chosen  
9 and stored. It next imports the data by using the combination of System  
10 Defaults-F7 326. The user then chooses between a Manual Import Function 328 and  
11 an Auto Import Scheduler Function 330. The Manual Import Function 328 is  
12 activated manually by the F5 function key.  
13

14 In an embodiment of the present invention, the Scheduler Function 330  
15 is actuated by depressing a combination of the Control and S keys (Ctrl+S)  
16 simultaneously, upon which a menu is presented allowing the user to turn this  
17 function on, the type of data to be imported, the frequency, and the time  
18 scheduled for the data to be imported. The data can also be imported over a  
19 network, such as a LAN or WAN, if the user's system is a part of such a network,  
20 or via other communications means, whether wired or wireless. By using the  
21 Scheduler function, the present invention will be ready with updated data for the  
22 user to employ in comparing securities information.  
23

#### 24 **Erase Database Function**

25 The Erase Database Function 322 enables the user to erase the entire  
26 historic data database 213 and/or the current hourly data database 215 with  
27 Symbols-Names and/or Process Log 332. In an embodiment of the present invention,  
28 the Erase Database 322 function is actuated by simultaneously depressing the  
29 Control and E keys (Ctrl+E) on the keyboard.  
30

31 Using the Erase Database function 322 the user can strip the program  
32 down to its database engine; the entire database is erased. The Erase Database  
33 322 function also enables the user to remove data that may have been corrupted,  
34 such as by power failures, surges and the like.  
35

36 The Erase Database 322 function can also be used with the

1 Archive/Restore 312 function described above. When these two functions are used  
2 in combination, this combination enables the user to swap symbols and data as has  
3 been described.

#### 5 **Process Log Function**

6 The Process Log Function 332 is a recording or tracking function that  
7 records all Import, Comparison Failures, Archive/Restore and Erased Database  
8 events in a Process Log database 334. The Process Log database 334 is accessible  
9 to and employed by the user to monitor changes in the master database of the  
10 present invention. The Process Log Function 332 is useful for monitoring data  
11 transfers that may have occurred, and for symbol comparison failures. In an  
12 embodiment of the present invention, the Process Log 332 Function is actuated by  
13 simultaneously depressing the Control and L keys (Ctrl+L).

14  
15 In an embodiment of the present invention, the Process Log Function  
16 332 is on. During a Comparison Function 202, the user will see color-coded  
17 flashing messages on the video display terminal 30 indicating those symbols 204  
18 whose data was not calculated because of missing FROM or TO data. In an  
19 embodiment of the present invention, a yellow flashing message indicates that the  
20 FROM data of a security was not calculated, while a green flashing message  
21 indicates that the TO data of a security was not calculated. The colors of the  
22 flashing messages can be varied by methods known to those skilled in the art.

23  
24 The Process Log database 334 log created can be: viewed on the video  
25 display terminal 30; printed; or date-range deleted.

#### 26 27 **Other Utilities**

28 The present invention includes a Help file and a Glossary file. The  
29 Help file describes the various functions of the program, while the Glossary file  
30 defines the terminology employed by the present invention. The content of both  
31 the Help and Glossary files are expressly herein incorporated by reference.

#### 32 33 **OPERATING SYSTEM COMPATIBILITY**

##### 34 **a. Microsoft (R) WINDOWS (TM) Attributes:**

35 The present invention is designed to be cross-platform transportable.  
36 In an embodiment of the present invention, it is written in a relational database

1 tool that is compatible with the Disk Operating System ("DOS"), such as in FOXPRO  
2 (TM, owned by the Microsoft Company, Redmond, WA), making it cross-platform  
3 transportable.  
4

5 **b. Windowing Functions**

6 The present invention includes a windowing function 336 in which the  
7 invention can be operated in either a Microsoft WINDOWS (TM) environment, or in  
8 DOS mode, on a video display terminal 30. When the present invention is  
9 operating in a WINDOWS (TM) environment, the DOS window can be reduced to a small  
10 size on the screen (a "DOS box"), such that a fully functional screen of the  
11 present invention can have a size ranging from being barely larger than that of  
12 a simple icon seen in a WINDOWS (TM) or enlarged to any font size. This  
13 windowing functionality allows the present invention (called Wave-runner (TM))  
14 to be displayed and working side-by-side with other launched programs in the  
15 WINDOWS (TM) environment. The elements of the windowing function 336 are  
16 conventional, as is known to those skilled in the art, and will not be further  
17 discussed.  
18

19 **c. Compatibility with handheld and pocket devices:**

20 The present invention uses a utility function 338 called XT-CE  
21 (pronounced ecstasy) which is a DOS environment emulation program, and is  
22 obtained from a third party supplier for devices compatible with the Microsoft  
23 CE (TM, registered trademark of Microsoft Corp., Redmond, WA) operating system.  
24 This utility enables handheld devices that operate using the Microsoft Pocket CE  
25 (TM) operating system to run the present invention. This utility is available  
26 from Microsoft Corp. at the company's web site ([www.microsoft.com](http://www.microsoft.com)). Another is  
27 "Pocket DOS" of the same functionality, also available at [www.microsoft.com](http://www.microsoft.com).  
28

29 **d. Wireless Applications**

30 In another embodiment of the present invention, the invention can be  
31 used on a wireless device which enables the user to communicate with a third  
32 party data provider using wireless communication methods, such as by analog or  
33 digital cellular communication, or other communications frequencies.  
34

35 A theme common to most securities prospectuses, and routinely stated  
36 in commentaries on the financial markets, is that generally the past performance

1 of a security is no guarantee that it will perform similarly in the future.  
2 However, historical analysis of financial information has led to the development  
3 of many theories about how the equities market may perform in the future. Some  
4 factors include whether there have been major wars, economic depressions,  
5 presidential elections. One recent such indicator, termed the "Super Bowl  
6 factor", suggests that if the winning team is from the National Conference, the  
7 stock market will have an "up" year, and if the winning team is from the American  
8 Conference, the stock market will have a "down" year. Using the present  
9 invention, an investor can watch the recent trends of a security, and use these  
10 trends in conjunction with the investor's knowledge or other parameters to make  
11 decisions whether to buy or sell a security, or to take other actions, such as  
12 purchase or sale of options or puts, etc. based on the security's recent  
13 performance.

14  
15 Therefore, although this invention has been described with a certain  
16 degree of particularity, it is to be understood that the present disclosure has  
17 been made only by way of illustration and that numerous changes in the details  
18 of construction and arrangement of parts may be resorted to without departing  
19 from the spirit and scope of the invention.  
20